APPENDIX C
WIND CLIMATOLOGY OF THE WINTER SHAMAL

The winter shamal is a relatively rare event, with winds at most Persian Gulf locations exceeding 20 kt less than 5% of the time during the season. The exceptions to this fact are the areas near Lavan Island, Halul Island, and Ras Rakan at the tip of the Qatar Peninsula, where winter winds in excess of 20 kt occur from 5% to 10% of the time. The operational significance of the relatively rare and irregularly occurring gale force winds of the stronger shamals stands out in marked contrast to the more common conditions of lighter winds.

Figures C-1 through C-5* are wind roses for selected Gulf locations for November through March. The winds are predominantly northwesterly over most of the Gulf, but blow westerly or southwesterly in the southeast part of the Gulf.

Figure C-6 presents annual wind exceedance graphs for the same locations. They show the percentage frequency with which wind velocities exceed a given value at a certain location for a particular month. Values for each month are then connected together to yield an annual pattern.

No other statistics are readily available to assess the frequency of shamal occurrence. Forecasting experience indicates, however, that shamals with gale force winds lasting 24-36 hr following cold frontal passages (the type described in Case Study 1, Appendix A) may occur as frequently as two to three times per month from December through February. Briefer, but more frequent, periods of gale force winds follow the weaker cold frontal passages in March. The persistent 3-to-5 day shamal (the type described in Case Study 2, Appendix B) usually occurs only once or twice in a winter season; it is accompanied by exceptionally high winds and seas.

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*Figures in this Appendix developed by IMCOS Marine, Ltd., London, from data collected at oil company locations around the Persian Gulf -- Oil Companies Weather Coordination Scheme, 1974.

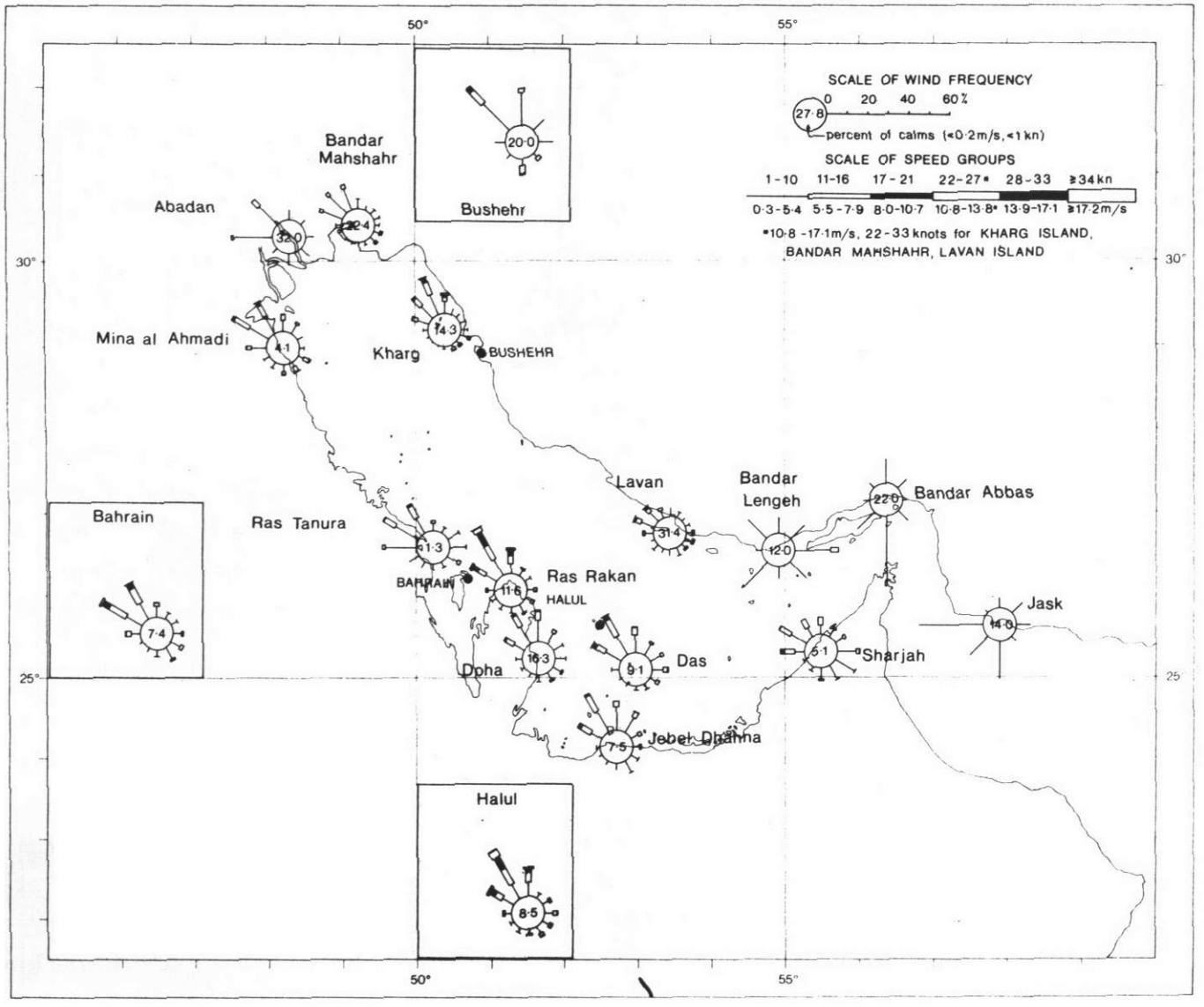


Figure C-1. Distribution of surface winds for November.

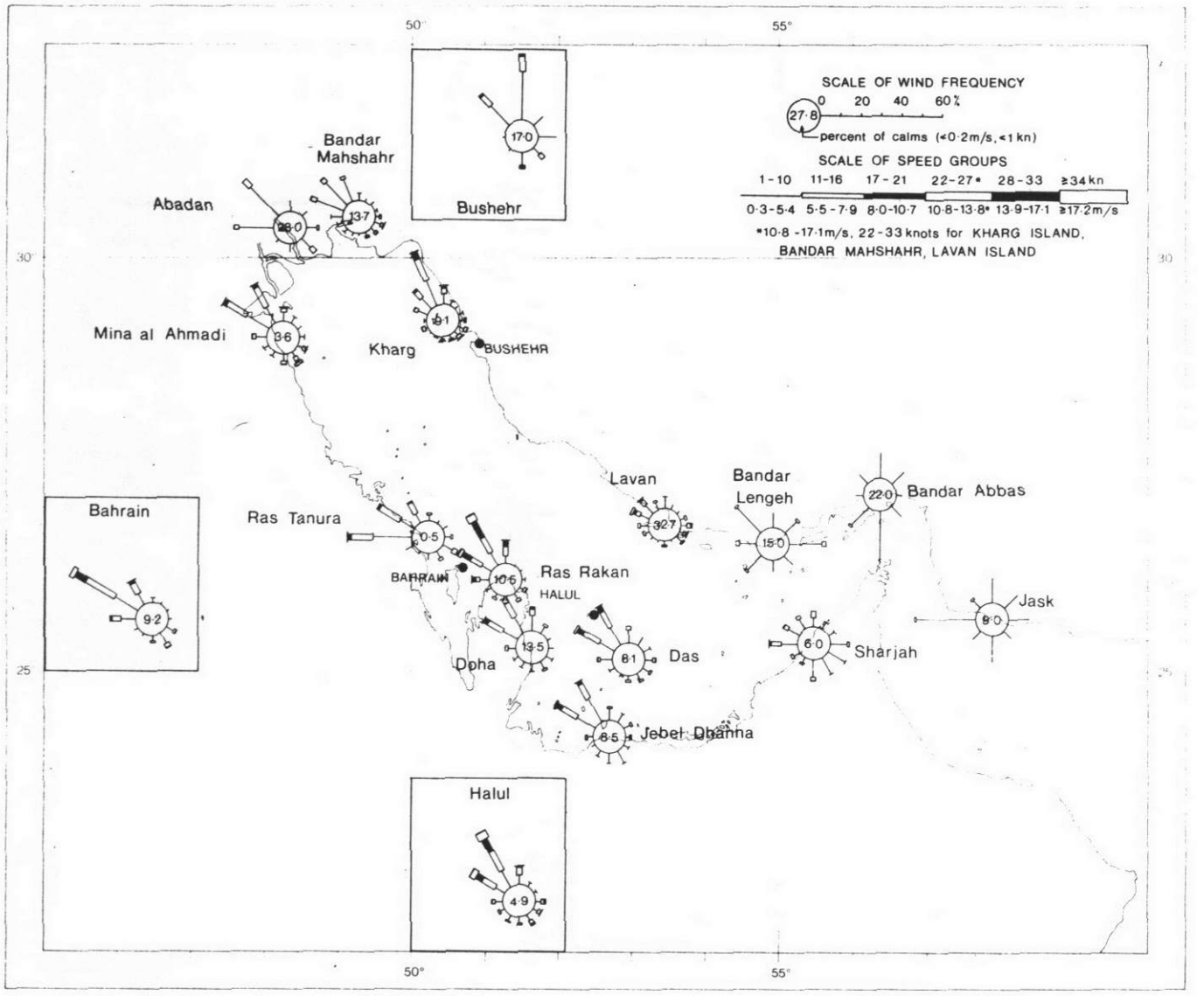


Figure C-2. Distribution of surface winds for December.

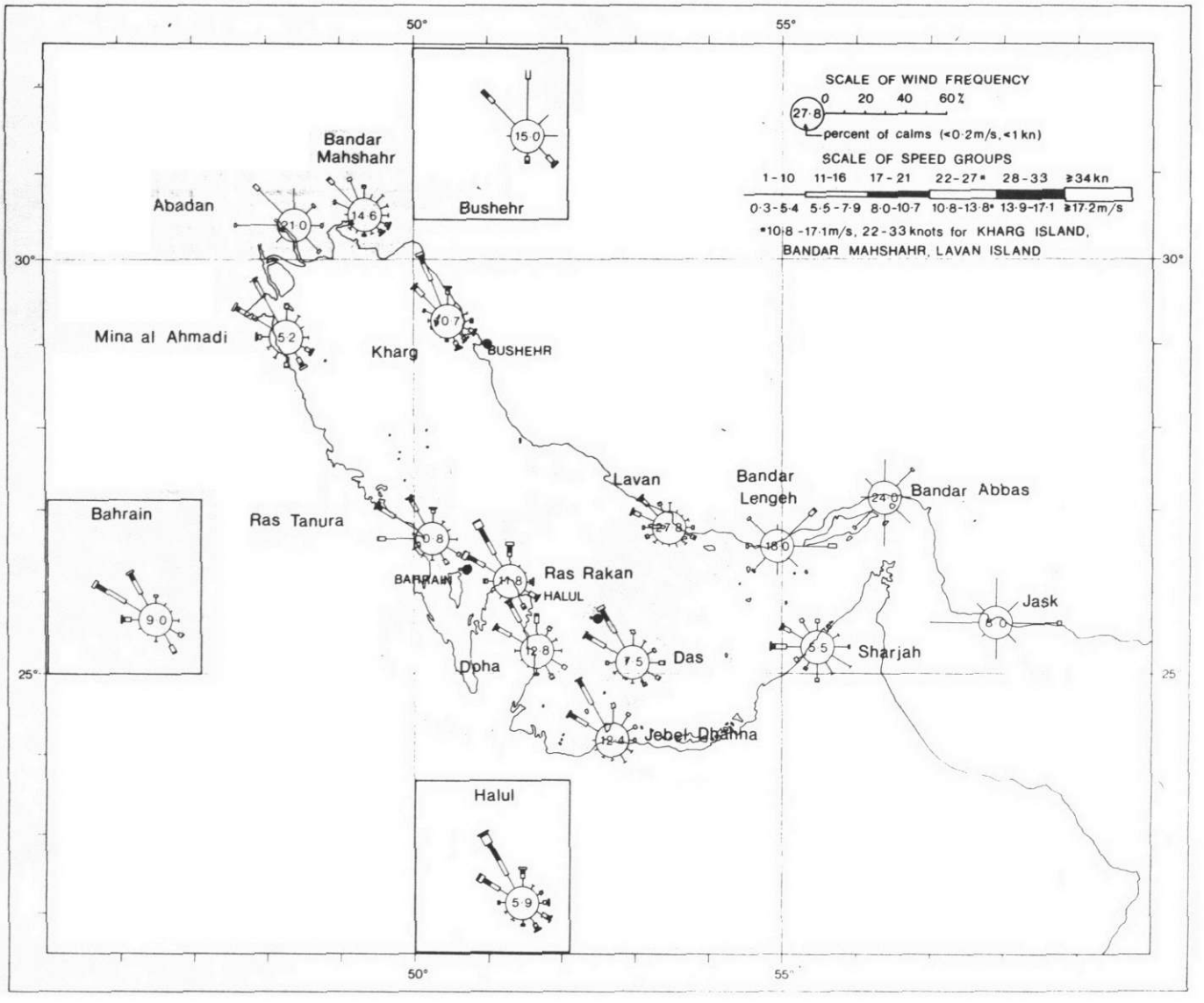


Figure C-3. Distribution of surface winds for January.

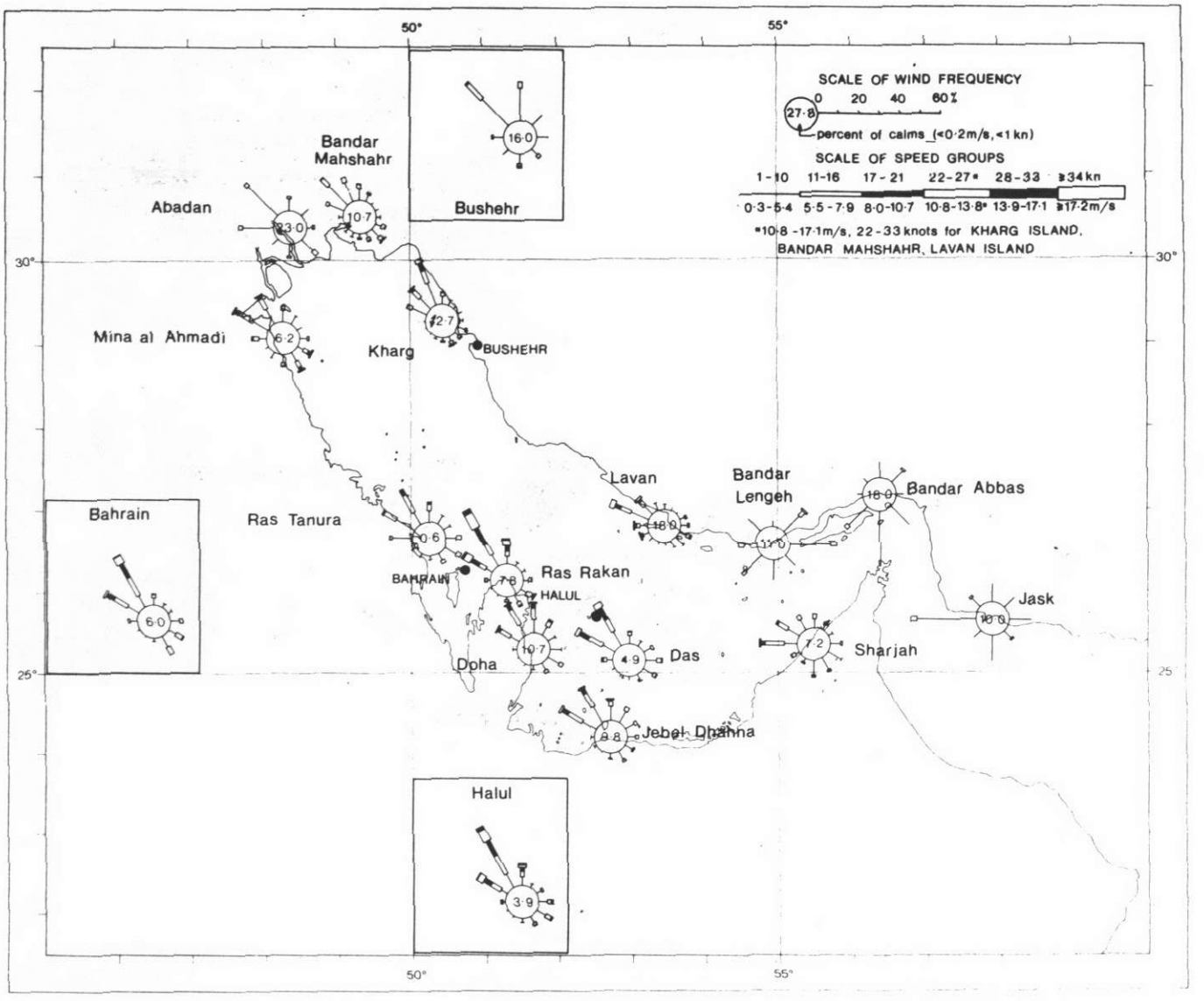


Figure C-4. Distribution of surface winds for February.

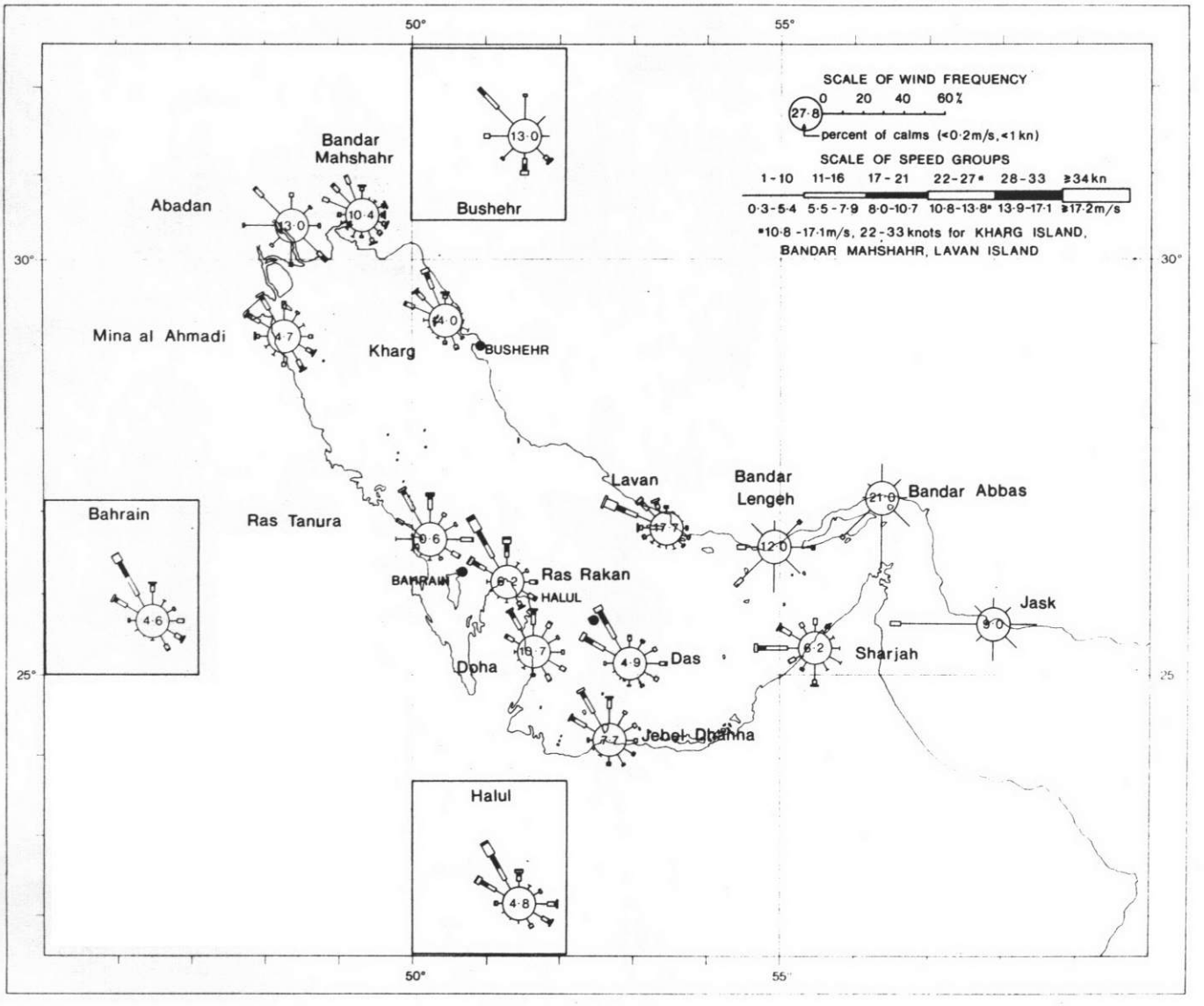
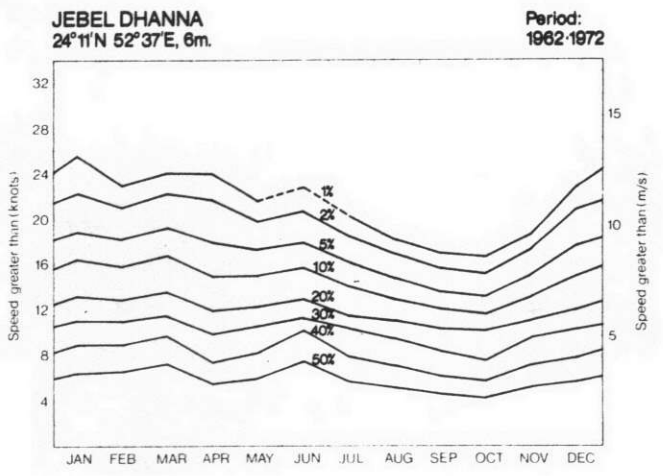
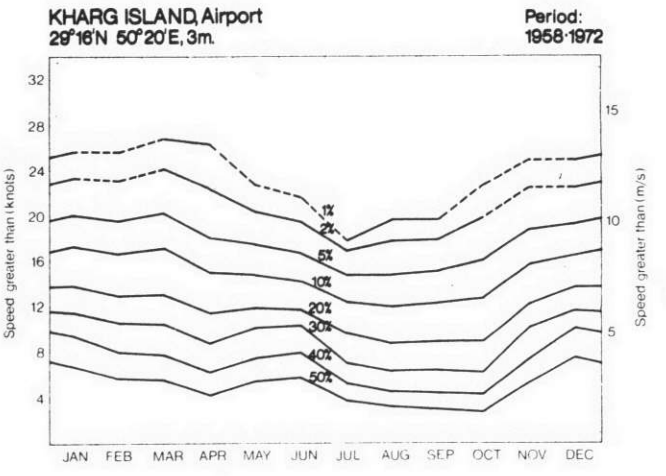
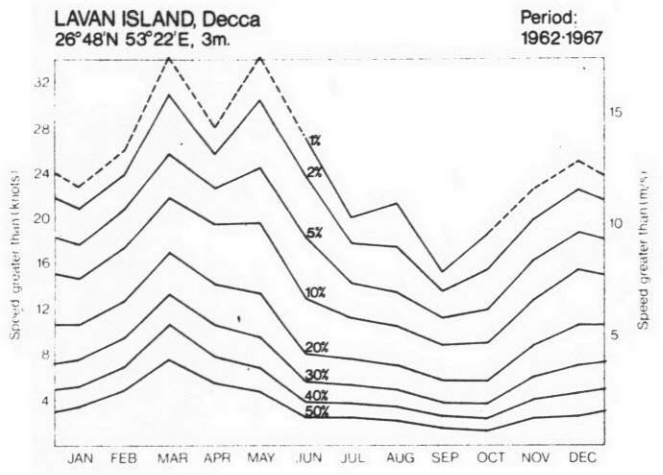
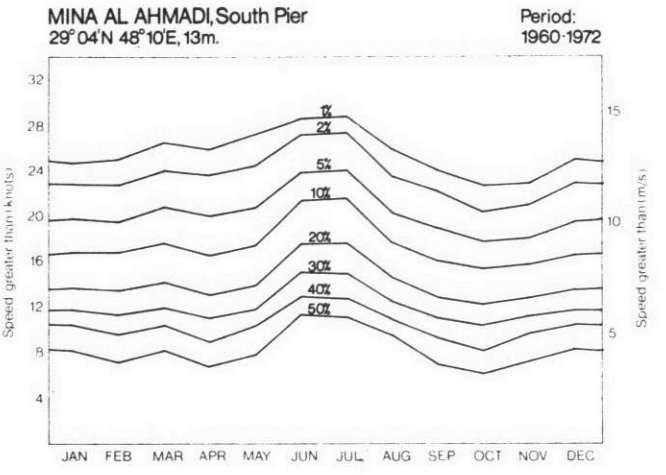


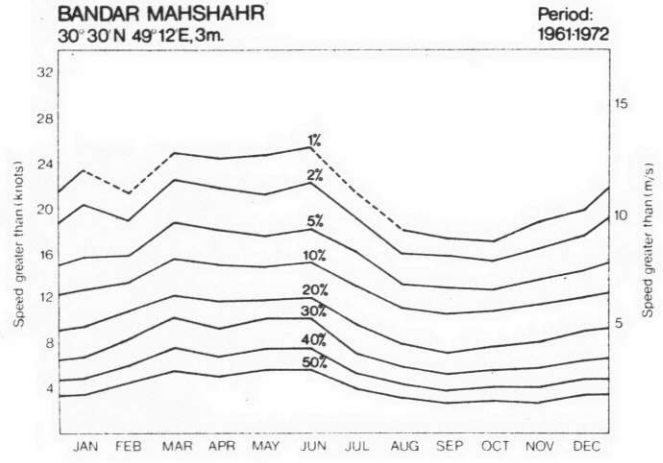
Figure C-5. Distribution of surface winds for March.











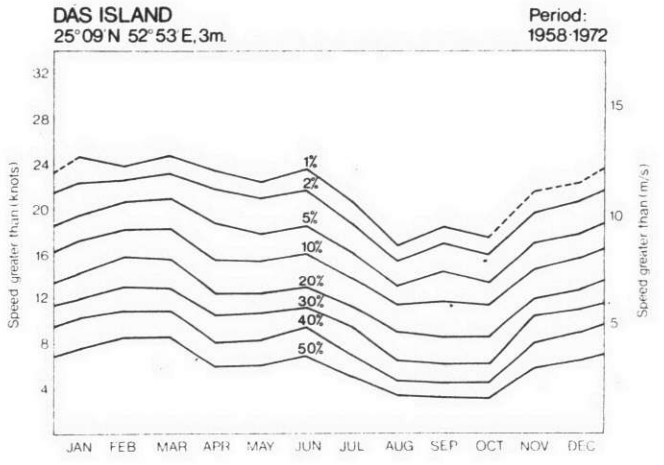


Figure C-6. Graphs of surface wind speed average exceedance at selected Persian Gulf locations.

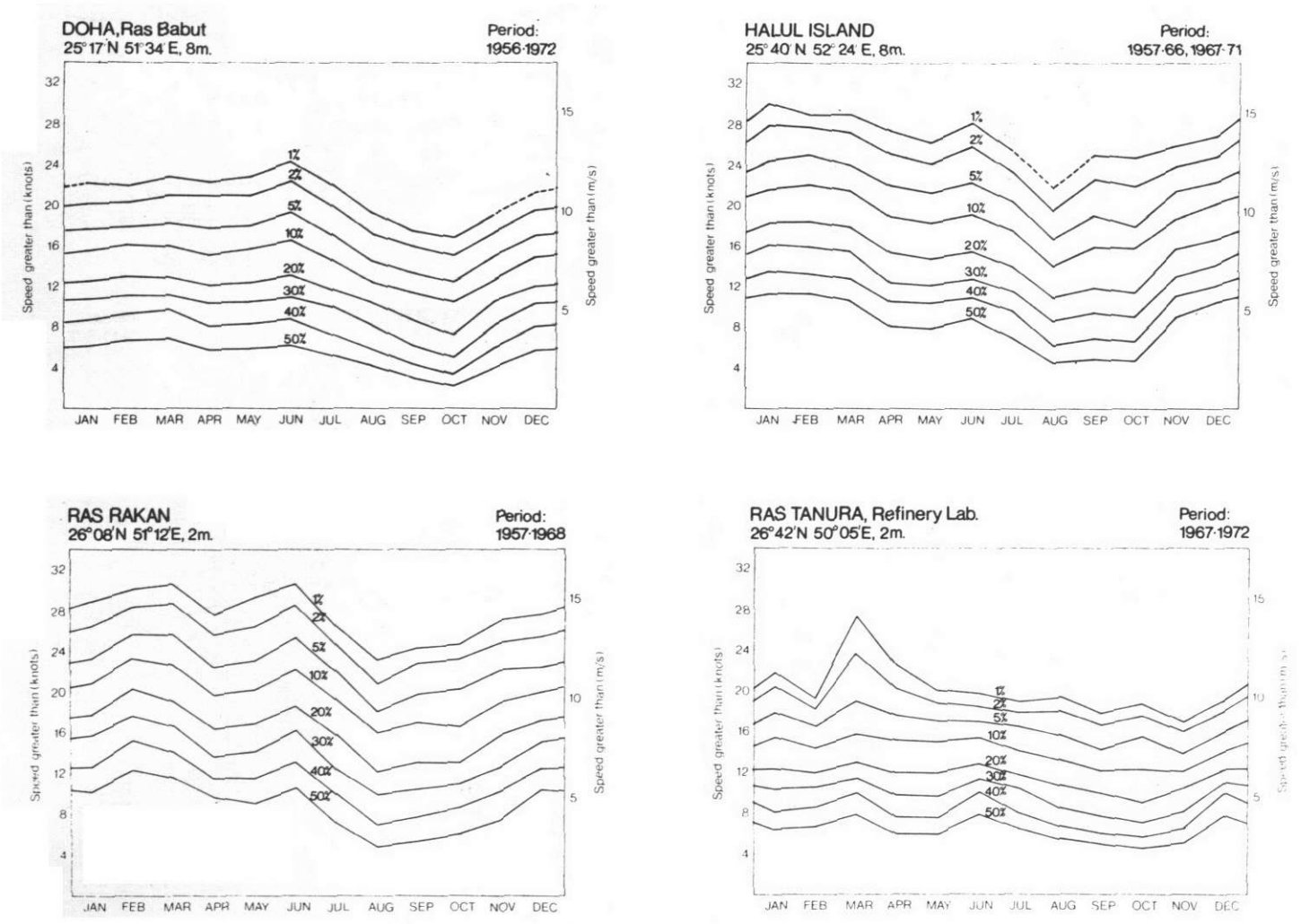


Figure C-6. Continued.